TECHNICAL NOTES

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ROCKY MOUNTAIN STATION

STN PUB ALASKA FOREST RESEARCH CENTER U. S DEPARTMENT OF ACRICULTURE, FOREST SERVICE

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Cubic Form Class Volume Tables for Southeast Alaska

Tables for estimating merchantable cubic foot volume of Southeast Alaska stands have previously been based on diameter and height only. The Girard Form Class 1 has been added in constructing the following series of tables to give greater accuracy in local pulptimber cruising.

The tables show gross cubic foot volume inside bark from a usable stump to a 6-inch top since pulp sale contracts call for utilization to a 6-inch top if merchantable.

The form class of the 415 trees used in making the tables ranged from 70 to 95 with 82 percent falling between 80 and 90. Form class 85 was most common for both Sitka spruce and western hemlock. Measuring down trees encountered while cruising is the simplest method of checking form class estimates.

As western red-cedar and Alaska cedar probably will not be used for pulp, their volume would be taken from Girard and Bruce's form class board foot tables for 32-foot logs. 2/ These tables check our Southeast Alaska spruce and hemlock very well, and have been recommended for use in sawtimber cruising. How accurate they are for cedar is unknown as few measurements are available for checking.

The cubic tables here presented check the sample trees from which they were made with an aggregate deviation of less than three-tenths of 1 percent, and an average deviation of 7 percent. The standard error of estimate for an individual tree was 11 percent.

^{1/} Diameter inside bark at top of first 16-foot log, divided by diameter breast high outside bark.

^{2/} Tables for estimating board foot volume of trees in 32-foot logs. James W. Girard and Donald Bruce. Mason, Bruce & Girard, American Bank Building, Portland, Oregon.

Tree			Gros	s cubic	foot v	olume.	inside	bark		
diameter			Numb	er of l	6-foot	logs to	6-inch	top		
(inches)	1	2	3	4	5	6	7	8	9	10
8 10 12 14 16	6 8 10 13 16	10 13 17 21	13 17 22 26	16 22 27 33	22 27 34 41	26 34 41 49	62			
18 20 22 24 26	21 26	26 33 41	33 40 50 59	41 50 59 70 83	49 58 70 84 99	59 72 88 104 120	75 90 107 124 142	92 106 124 144 164	122 144 164 188	
28 30 32 34 36				96 111	114 128 147 164 180	136 152 172 192 212	163 182 202 224 248	186 208 232 256 280	216 240 264 296 320	
38 40 42 44 46					199 219 240 264	232 256 276 298 324	272 296 324 348 376	308 330 368 396 424	352 392 424 456 494	440 480 512 544
48 50 52 54 56						348	400 424 456 488 520	456 488 520 560 592	528 560 600 640 680	592 624 672 712 752
58 60 6 2 64 66							556 5 92	624 660	720 760 800 840 880	800 840 880 920 960
68 70										1000 1040

Tree	Gross cubic foot volume, inside bark										
diameter						logs to		top			
(inches)	1	2	3	4		6		8	9	10	
8 10 12 14 16	7 8 10 13 17	10 13 18 22	13 18 23 28	17 23 29 34	23 29 35 43	28 35 43 51	65				
18 20 22 24 26	22 28	28 34 43	34 42 52 62	43 52 62 74 87	51 61 74 88 104	62 76 92 109 126	79 94 112 130 149	97 111 130 151 172	128 151 172 197		
28 30 32 34 36				101	120 134 154 172 189	143 160 181 202 223	171 191 212 235 260	195 218 244 269 294	227 252 277 311 336		
38 40 42 44 46					209 230 252 277	244 267 290 313 340	286 311 340 365 395	323 346 386 416 445	370 412 445 479 519	462 504 538 571	
48 50 52 54 56						365	420 445 479 512 546	479 512 546 588 622	554 588 630 672 714	622 655 706 748 790	
60 62 64 66							584 622	655 693	756 798 840 882 924	840 882 924 966 1008	
68 7 0										1050 1092	

Tree			Gros	s cubic	foot v	olume,	inside l	oark		
diamete	r					logs to		top		
(inches) 1	2	3	4	5	6	7	8	9	10
8 10 12 14 16	7 9 11 14 18	11 14 18 2 3	14 18 24 29	18 24 30 36	24 30 37 45	29 37 45 54	69			
18 20 22 24 26	23 29	29 36 45	36 44 55 65	45 55 65 77 91	54 64 77 92 109	65 79 97 114 132	83 99 118 136 156	101 117 136 158 180	134 158 180 207	
28 30 32 34 36				106 122	125 141 162 180 198	150 167 189 211 233	179 200 222 246 273	204 229 255 282 308	238 264 290 326 352	
38 40 42 44 46					219 241 264 290	255 282 304 328 356	299 326 356 383 414	339 363 405 436 466	387 431 466 502 544	484 5 2 8 563 598
48 50 5 2 54 56						383	440 466 50 2 5 37 5 72	502 537 572 616 651	581 616 660 704 748	651 686 739 783 827
58 60 62 64 66							612 651	686 72 6	792 836 880 924 968	880 924 968 1012 1056
6 8 7 0										1100 1144

Tree			Gro	ss cubi	c foot	volume.	insi de	bark	· · · · · · · · · · · · · · · · · · ·	
diamete	er		Num	ber of	16-foot	logs t	o 6-incl	top		
(inches		2	3	4	5	6	7	8	9	10
8 10 12 14 16	7 9 11 15	11 15 19 24	14 19 25 30	19 25 31 38	25 31 39 47	30 39 47 56	72			
18 20 22 24 26	24 30	30 38 47	38 46 57 68	47 57 68 81 96	56 67 81 97 114	68 83 101 120 138	86 103 123 143 164	106 122 143 166 189	141 166 189 216	
28 30 32 34 36				110 128	131 147 169 189 207	156 175 198 221 244	188 209 232 258 285	214 239 267 294 322	248 276 304 340 368	
38 40 42 44 46		ŧ			229 252 276 304	267 294 317 342 373	313 340 373 400 432	354 379 423 455 488	405 451 488 524 568	506 552 589 626
48 50 52 54 56						400	460 488 524 561 598	524 561 598 644 681	607 644 690 736 7 82	681 718 773 819 865
58 60 62 64 66							639 681	7 18 759	828 874 920 966 1012	920 966 1012 1058 1104
68 7 0										1150 1196

Tree			Gro	ss cubi	c foot	volume,	insi de	bark		
diameter			Num	be r of	16-foot	logs t	o 6-incl	n top		
(inches)	<u>l</u>	2	3	4	5	6	77	. 8	9	10
8 10 12 14 16	8 10 12 15 19	11 15 20 25	15 20 26 32	20 26 33 39	26 33 40 49	32 40 49 59	75			
18 20 22 24 26	25 32	32 39 49	39 48 59 7 1	49 59 71 84 100	59 70 84 101 119	71 86 106 125 144	90 107 129 149 171	110 128 149 173 197	147 173 197 226	
28 30 32 34 36		,		115 133	136 154 177 197 216	163 182 206 230 254	196 218 242 269 298	223 250 278 307 336	259 288 317 355 384	
38 40 42 44 46					239 263 288 317	278 307 331 357 389	326 355 389 418 451	370 396 442 475 509	422 470 509 547 593	528 576 614 653
48 50 52 54 56						418	480 509 547 586 624	547 586 624 672 710	634 672 720 768 816	710 749 806 854 902
58 60 62 64 66							667 710	749 792	864 912 960 1008 1056	960 1008 1056 1104 1152
68 7 0										1200 1248

Tree			Gro	ss cubi	ic foot	volume.	insi de	bark		
diamete			Num				to 6-inc			
(inches	<u>) 1</u>	2	3	4	5	6	7	8	9	10
8 10 12 14 16	8 10 12 16 20	12 16 21 26	16 21 27 33	20 27 34 41	27 34 42 51	33 42 51 61	78			
18 20 22 24 26	26 33	33 41 51	41 50 62 74	51 62 74 88 104	61 73 88 105 124	74 90 110 130 150	94 112 134 155 178	115 133 155 180 205	153 180 205 235	
28 30 32 34 36				120 139	142 160 184 205 225	170 190 215 240 265	204 227 252 280 310	232 260 290 320 350	270 300 330 370 400	
38 40 42 44 46					249 274 300 330	290 320 345 372 405	340 370 405 435 470	385 412 460 495 530	440 490 530 570 618	550 600 640 680
48 50 52 54 56						435	500 530 570 610 650	570 610 650 700 740	660 700 750 800 850	740 780 840 890 940
58 60 62 64 66							695 74 0	780 825	900 950 1000 1050 1100	1000 1050 1100 1150 1200
68 7 0										1250 1300

Tree					ic foot					
diamete							to 6-inch	top		
(inches	3) T	2	3	4_		6	7	8	9	10
8 10 12 14 16	8 10 13 17 21	12 17 22 28	16 22 28 34	21 28 35 43	28 35 44 53	34 44 53 63	81			
18 20 22 24 26	27 34	34 43 53	43 52 64 77	53 64 77 91 108	63 76 91 109 129	77 94 114 135 156	98 116 139 161 185	120 138 161 187 213	159 187 213 244	
28 30 32 34 36				125 145	148 166 191 213 234	177 198 224 250 276	212 236 262 291 322	241 270 302 333 364	281 312 343 385 416	
38 40 42 44 46					259 285 312 343	302 333 359 387 421	354 385 421 452 489	400 427 478 515 551	458 510 551 593 643	572 624 666 707
48 50 52 54 56						452	520 551 593 634 676	593 634 676 728 770	686 728 780 832 884	772 811 874 926 978
58 60 62 64 66							723 770	811 858	936 988 1040 1092 1144	1040 1092 1144 1196 1248
68 7 0										1300 1352

		* Sugar								
Tree		11.	👍 Gro	ss cubi	c foot	volume.	inside	bark		
diamete	er		Num	ber of	16-foot	logs t	o 6-incl	n top		
(inches	3) 1	2	3	4	5	6	7	8	9	10
8 10 12 14 16	9 11 13 17 22	13 17 23 29	17 23 29 36	22 29 37 44	29 37 45 55	36 45 55 66	84			
18 20 22 24 26	27 36	36 44 56	44 54 67 80	55 67 80 95 112	66 79 95 113 134	80 97 119 140 162	101 121 145 167 192	124 144 167 194 221	165 194 221 254	70. Le
28 30 32 34 36				130 150	153 173 199 221 243	184 205 232 259 286	220 245 272 302 335	251 281 313 346 378	292 324 356 400 432	
38 40 42 44 46					269 296 324 356	313 346 373 402 437	367 400 437 470 508	416 443 497 535 572	475 529 572 616 668	594/ 648 691 734
48 50 52 54 56						470	540 572 616 659 702	616 659 702 756 799	713 756 810 864 918	804 842 907 961 1015
58 60 62 64 66							751 7 99	842 891	972 1026 1080 1134 1188	1080 1134 1188 1242 1296
68 7 0										1350 1404

Tree	**************************************		Gro	as cu is	c foot	volume.	insi de	bark		
diamete	r		Nun	ber o	1.6-f oot	logs t	o 6-incl			
(inches		2	3	4	5	6	7	8	9	10
8 10 12 14 16	9 11 14 18 22	13 18 23 30	18 23 30 37	23 30 38 46	30 38 47 57	37 47 57 68	87			
18 20 22 24 26	28 37	37 46 57	46 56 69 83	57 69 83 99 116	68 62 59 118 139	83 101 123 146 168	105 125 150 174 199	129 149 174 202 230	172 202 230 263	
28 30 32 34 36				13 <u>/</u> 156	159 179 206 250 252	190 213 241 269 297	228 254 282 314 347	260 291 325 358 392	302 336 370 414 448	
38 40 42 44 46					2 7 9 30 7 3 3 6 3 7 0	325 358 386 416 454	381 414 459 487 526	431 458 515 554 594	493 549 594 638 692	616 672 717 762
48 50 52 54 56						487	560 594 638 683 72 8	638 683 728 784 829	739 784 840 896 952	836 874 941 997 1053
58 60 62 64 66							778 829	874 924	1008 1064 1120 1176 1232	1120 1176 1232 1288 1344
68 7 0										1400 1456

Tree			Gro	ss cubi	c foot	volume.	inside	bark		
diameter							o 6-inc			
(inches)	1	2	3	4		6	7	8	9	10
8 10 12 14 16	9 12 14 18 23	14 19 2 4 31	18 24 31 38	24 31 39 48	31 39 49 59	38 49 59 7 1	90			
18 20 22 24 26	28 3 9	38 48 59	48 58 72 86	59 72 86 102 121	71 85 102 122 144	86 104 128 151 174	109 130 155 180 206	133 154 180 209 238	178 209 238 273	
28 30 32 34 3 6				139 161	165 186 213 238 261	197 220 249 278 307	237 263 292 325 360	269 302 336 371 406	313 348 383 429 464	
38 40 42 44 46					289 318 348 383	336 371 400 431 470	394 429 470 505 545	447 474 534 574 615	510 568 615 661 717	638 696 742 789
48 50 52 54 56						505	580 615 661 708 754	661 708 754 812 858	766 8 12 870 928 986	868 905 974 1032 1090
58 60 62 64 66							806 858	905 95 7	1044 1102 1160 1218 1276	1160 1218 1276 1334 1392
68 7 0										1450 1508

Tree	········		Gro	38 cub	ic foot	volume	e, in si de	bark		
diamete			Num	og च ार्	16-foot	logs	to 6-inch	top		
(inches) 1	2	3	1.	5	6	7	8	9	10
8 10 12 14 16	10 12 15 19 24	14 19 25 32	19 25 32 40	25 32 41 49	32 41 50 61	40 50 61 73	94			
18 20 22 24 26	2 9 4 0	40 49 61	49 60 7 4 89	61 74 89 106 125	73 88 106 126 149	89 108 132 156 180	113 134 161 186 214	138 160 186 216 246	184 216 246 282	
28 30 32 34 36				144 167	170 192 221 246 270	204 228 258 288 318	245 272 302 336 372	278 312 348 384 4 <i>2</i> 0	324 360 396 444 480	~.
38 40 42 44 46					299 329 360 396	348 384 414 446 486	408 444 486 522 564	462 494 552 594 636	528 588 636 684 742	660 720 768 816
48 50 52 54 56						522	600 636 684 732 780	684 732 780 840 888	792 840 900 960 1020	900 936 1008 1068 1128
58 60 62 64 66							834 888	936 990	1080 1140 1200 1260 1320	1200 1260 1320 1380 1440
68 7 0										1500 1560